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U. S. DEPARTMENT OF AGRICULTURE,  
BUREAU OF ANIMAL INDUSTRY.

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**HOW TO USE ANTI-HOG-CHOLERA SERUM.<sup>1</sup>**

There are two methods of applying anti-hog-cholera serum in practice. In one the serum alone is used, producing immunity lasting from 30 to 90 days; in the other the virus of hog cholera and the serum are injected simultaneously—that is, virus at one point and serum at another. This latter is known as the "simultaneous method" and will produce active or lasting immunity. If the serum used in this simultaneous treatment is not good, or if the mode of application is faulty, disease may be set up in the treated herd. For this reason it is the general consensus of opinion that the simultaneous method should be used only by those who have had special training, and it is agreed that the ideal arrangement would be to allow its use only by Federal and State veterinary officers.

The serum-alone treatment, on the other hand, may be given by anyone without danger of causing hog cholera. If the serum is good the farmer may give it to his hogs without fear, provided it is administered in the proper way. While it would no doubt be best to have even the serum alone always administered by a skilled agent, farmers may obtain good results if proper care is used. The farmer should remember that the serum-alone treatment is very different from the simultaneous treatment. The following advice regarding the use of serum is offered for farmers who can not obtain the services of a skilled agent:

**USE OF RELIABLE SERUM IMPORTANT.**

All serum can not be depended upon and farmers are cautioned against putting implicit confidence in a serum merely because it is labeled "Anti-Hog-Cholera." The serum must be prepared right in order to protect hogs. Farmers should use every effort to get a good reliable serum from the State college or from a reliable dealer.

<sup>1</sup> Reprinted from Farmers' Bulletin 590.

Anti-hog-cholera serum is most effective when used as a preventive. It will also cure a large number of hogs in the early stages of the disease. It is of much less value, however, for hogs that are visibly sick. The farmer should make careful preparations before beginning the inoculation. Hogs that are sick should be separated from the well and marked so as to distinguish them. The pen or inclosure where the injections are made should be clean and free from dust.

#### HOW TO ADMINISTER SERUM.

The serum is administered by injecting it deep under the skin with a hypodermic syringe. Before beginning the injection of a herd, care must be taken to see that the syringes and needles are not only absolutely clean but that they have been previously boiled in water for 10 or 15 minutes. The purpose of the boiling is to kill the germs that may be on the instruments. Therefore, both needle and syringe should be kept clean and not allowed to become soiled during use, as by being laid on a dirty plank, dropped on the ground, or touched with dirty hands. It is a good idea to spread a clean towel on the plank or table where the work is being done. Before using, the serum should be poured into some receptacle with a cover (as a jelly glass with a tin top), both the receptacle and cover having been sterilized by boiling in water before use. The glass should be allowed to cool before the serum is poured into it, and should be always covered except when serum is being taken from it.

The serum is injected directly into the tissues on the inner side of the thigh or, better, into the loose tissues between the foreleg and the body. The needle is inserted into the skin perpendicularly to a depth of from one-half to 1 inch, depending upon the size of the hog. Before the injection is made the skin of the hog over the point selected for injection should be thoroughly cleansed by washing with soap and water, and the surface then scrubbed with some reliable disinfectant, such as compound solution of cresol (U. S. P.). This disinfectant can be procured at drug stores, and should be diluted before use by adding 1 part of it to 30 parts of soft water.

#### CARE AS TO THE DOSE.

Care should be used in estimating the weight of hogs, because the amount of serum required depends upon the size of the hog injected. The usual dose is commonly given on the package in which the serum comes. Be careful not to underestimate. Overestimate rather than underestimate, and thereby be sure of giving an ample dose of serum. After the injections are made, the hogs should be turned into a clean yard, free from mudholes and excessive dust. The hogs should be

kept in this inclosure for several days at least after the injection, to enable the puncture wounds to heal thoroughly. They should be given soft, easily digested food.

Every farmer should keep an accurate record of the injections he makes, so that he will know what success has attended the treatment. He should make a record of the number of hogs that died from hog cholera before treatment, the number sick and the number apparently well at the time of treatment, and he should later keep a record of the number of sick and well ones that died following treatment. Keeping these records may enable him to determine whether or not the serum he used was good, and it may also show whether or not the work was properly done. If any hogs develop abscesses at the point of injection, a note should be made of the fact, keeping account of the number. Abscesses indicate that the serum was not right or that the work was not properly done.

#### **SANITARY PRINCIPLES MUST BE OBSERVED.**

The proverb that "An ounce of prevention is worth a pound of cure" is especially applicable to hog cholera, and cooperation among farmers in combating the disease is very important. When hog cholera breaks out on a farm the farmers in the neighborhood should join in a strong effort to confine the disease to the one farm where it already exists, by instituting a strict quarantine, and also, when possible, by the administration of the protective serum to the droves on adjoining farms. It is a mistake to neglect timely sanitary precautions and to rely wholly on the use of serum. The serum is useful not so much for curing hogs sick with the disease as for preventing other hogs from taking it.

Every farmer should make absolutely certain that no dirt or implement is brought from an infected hog lot into another hog lot. Hog cholera can be carried in dirt on shoes, on wagon wheels, or on the feet of dogs. It has been proved that a pen of hogs infected with hog cholera can be kept within 10 feet of a well herd without communicating the disease, provided no dirt or implement or other object is moved from the former to the latter pen. If, however, the pen with the uninfected hogs should be cleaned with a hoe or shovel that has been used in the infected pen, the well herd would be almost certain to get the disease. Dogs, crows, and buzzards can transport particles of flesh from dead hogs and thus carry the disease.

The following precautions are recommended for keeping the contagion from an uninfected drove:

(1) Do not locate hog lots near a public highway, a railroad, or a stream. The germ of hog cholera may be carried along any one of these avenues.

(2) Do not allow strangers or neighbors to enter your hog lots, and do not go into your neighbors' lots. If it is absolutely necessary to pass from one hog lot into another, first clean your shoes carefully and then wash them with a 3 per cent solution of the compound solution of cresol (U. S. P.).

(3) Do not put new stock, either hogs or cattle, in lots with a herd already on the farm. Newly purchased hogs should be put in separate inclosures well separated from the herd on the farm and kept under observation for three weeks, because practically all stock cars, unloading chutes, and pens are infected with hog cholera, and hogs shipped by rail are therefore apt to contract hog cholera. Freight cars and other conveyances which have carried infected stock should be properly disinfected after unloading.

(4) Hogs sent to fairs should be quarantined for at least three weeks after they return to the farm.

(5) If hog cholera breaks out on a farm, separate the sick from the apparently healthy animals, and burn all carcasses of dead animals on the day of death. Do not leave them unburned, for this will endanger all other farmers in the neighborhood. The prevailing practice of rushing sick herds to market should be discouraged. Treatment with the serum should be tried instead.

(6) If, after the observance of all possible precautions, hog cholera appears on your farm, notify the State veterinarian or State agricultural college and secure serum for the treatment of those not affected. The early application of this serum is essential. *The United States Department of Agriculture does not distribute serum direct to farmers.*

Some of these precautions may seem unnecessary and troublesome, but they do not cost much, and they are very valuable preventive measures.

At this time it is impracticable to treat every hog in the United States with the anti-hog-cholera serum. In many States the authorities can not supply enough serum to treat the infected and exposed herds, to say nothing of making immune all herds that are not affected. When an outbreak is located, the most effective plan is to treat immediately all the well hogs in the infected herd, as well as the hogs in herds located immediately adjoining the seat of the outbreak, so as to prevent the wider spread of the disease. At the same time, neighboring farmers should keep away from the infected farm, and the owner of the diseased hogs should be careful not to go into other farmers' lots. When the cholera has abated, the yards in which the sick hogs were kept should be thoroughly cleaned and disinfected.

Where serum is not available, the simple precautions above given will, in many cases, prevent the spread of the contagion. These pre-

cautionary measures should be used even where serum can be obtained, because it is far better to keep hog cholera out of the drove than to rely on the use of the serum after the disease has appeared.

Hog cholera, in the epidemic of 1913, caused an estimated loss for the year of about \$65,000,000. No other animal disease produces such a loss. It is estimated that in 1913 there were 107 hogs lost per 1,000 from cholera, and indications point to a further increase in this disease unless preventive measures are used. Such enormous loss of a valuable food animal is nothing short of a calamity.

To combat this there must be honest and earnest cooperation between all the interests involved, including the scientists and veterinarians, farmers, common carriers, and packing interests. State and Federal authorities must work in absolute harmony, and all concerned must endeavor to suppress personal opinions on relatively unimportant matters and aid in the adoption of uniform methods throughout the entire country.





